

CHAPTER 2. AIRLINE TRANSPORT PILOT CERTIFICATES

SECTION 5. ORAL AND FLIGHT TEST EVENTS IN HELICOPTERS

145. DESCRIPTION OF SPECIFIC EVENTS.

Inspectors and examiners should use the “ATP/Type Rating Oral Test Job Aid—Helicopter” and the “ATP/Type Rating Flight Test Job Aid—Helicopter” when conducting oral and flight tests (see figures 5.2.5.1. and 5.2.5.2.). The events required on these tests are listed on the job aids. In the paragraphs that follow, the conditions and techniques for presenting selected events are provided for the purpose of increasing standardization, reliability, and validity of the flight test process for helicopters.

147. WAIVER OR MODIFICATION OF FLIGHT TEST EVENTS.

Federal Aviation Regulations (FAR) 61.163(a) authorizes inspectors and examiners to modify or waive the events specified by FAR Part 61, Appendix B, to ensure reasonable and safe use of the helicopter during flight. Inspectors and examiners should not waive an event for convenience, but shall not hesitate to use the waiver authority for the purpose of safety.

149. PREPARATION AND SURFACE OPERATION EVENTS.

An applicant shall be observed performing the inspection of the helicopter interior, exterior, and emergency equipment while performing engine-start, taxi, and powerplant checks in accordance with the operator’s aircraft operating manual.

A. Exterior Inspection. The exterior inspection is not an extension of the oral phase in which systems knowledge is examined, but is a demonstration of an applicant’s ability to perform a safety check. Inspectors and examiners shall limit questions to those necessary for determining whether an applicant can recognize components that are in an unsafe condition. The inspector or examiner shall determine whether the applicant inspects these items in accordance with the procedures in the operator’s aircraft operating manual.

B. Cockpit Preflight Inspection. An applicant shall be required to complete the cockpit preflight check following the procedures in the operator’s aircraft operating manual while using the appropriate checklist. An applicant should be asked to demonstrate the use of the minimum equipment list (MEL) and to conduct a passenger briefing. In helicopters requiring

more than one pilot, the proper challenges and responses to the checklist must be used.

C. Engine-Start and Rotor Engagement. The applicant shall be required to perform an engine-start and rotor engagement using the correct procedures. Simulated problems may be introduced and should be carried through to the expected conclusion in line operations for the purpose of evaluating crew coordination and the applicant’s proficiency.

D. Taxiing or Surface Hover. The inspector or examiner shall evaluate the applicant’s ability to safely maneuver the helicopter in proximity to the surface while managing outside vigilance and accomplishing cockpit procedures. The applicant must ensure that the taxi path is clear of obstructions, comply with local taxi rules and control tower instructions, make proper use of checklists, and maintain control of the helicopter and crew.

E. Powerplant Checks. Powerplant checks must be accomplished before takeoff in accordance with the operator’s aircraft operating manual.

151. TAKEOFF EVENTS. The applicant must accomplish each of the following takeoff events. These events may be combined when convenient and practical.

A. Normal Takeoff. A normal takeoff is defined as a takeoff beginning from a standing position on the surface or from a stabilized hover and not accompanied by an engine failure or malfunction during the takeoff or initial climb phase.

B. Instrument Takeoff. An instrument takeoff is defined as one in which instrument conditions are encountered or simulated at or before reaching an altitude of 100 feet above the airport elevation. The applicant shall be evaluated on control of the helicopter including transition to instruments as visual cues deteriorate. The applicant must also be evaluated on planning for the transition to an instrument navigation environment. This event may be conveniently combined with an area departure.

C. Engine Failure on Takeoff. The applicant must demonstrate the ability to maintain control of

the helicopter with the simulated failure of a powerplant.

(1) In single-engine helicopters, this event shall consist of a simulated power loss at a point (no lower than 500 feet above ground level (AGL)) requiring a descent to a location other than the departure point. This event need only be continued to a point where the inspector or examiner can make a determination of the applicant's proficiency. The event shall be terminated in a power recovery. This is a potentially hazardous event and shall be presented in a realistic manner that is consistent with safety. Inspectors shall exercise care when introducing the simulated engine failure at a reasonable airspeed and altitude, and give ample consideration to the helicopter's characteristics, length of landing area, surface conditions, wind direction and velocity, and any other pertinent factors that may adversely affect safety. Inspectors and examiners shall not introduce a simulated power failure in a single-engine helicopter in an area where an actual touchdown could not be completed safely, should it become necessary.

(2) In multiengine helicopters, the applicant shall demonstrate the ability to safely continue a takeoff with simulated failure of a powerplant at an airspeed that permits continued climb in forward flight.

(3) Helicopter configuration, airspeed, and operational procedures shall be as recommended in the operator's aircraft operating manual.

D. Rejected Takeoff. A rejected takeoff is a potentially hazardous event. It should be presented in a realistic manner; however, it must be consistent with safety.

(1) In single-engine helicopters, inspectors and examiners shall introduce a simulated problem so that a quick stop is required. Inspectors and examiners shall not introduce a simulated powerplant failure when testing this event in a single-engine helicopter. Instead, this event might be introduced by requesting the applicant to climb over a simulated obstacle on takeoff. Once the takeoff is in progress, the inspector or examiner can then inform the applicant that the climb will not clear the simulated obstacle.

(2) In multiengine helicopters, inspectors and examiners shall introduce a problem requiring an abort before the helicopter reaches a speed at which the helicopter is committed to takeoff.

(3) Inspectors and examiners shall take precautions to introduce the simulated failure at a reasonable airspeed and altitude, giving due consideration to the helicopter's characteristics, length of landing area, surface conditions, wind direction and velocity,

and any other pertinent factors that may adversely affect safety.

NOTE: The performance characteristics of some nontransport helicopters may make the introduction of a simulated engine failure on takeoff a potentially hazardous situation. When conducting a flight test in such helicopters, inspectors and examiners should use their authority to waive or modify this event.

E. Crosswind Takeoff. A crosswind takeoff from a standing position on the surface or a stabilized hover must be evaluated on all flight tests. When appropriate, a crosswind takeoff may be evaluated simultaneously with other types of takeoffs.

153. CLIMB, EN ROUTE, AND DESCENT EVENTS.

A. Area Departures and Arrivals. The area departure and arrival events include intercepting radials, tracking, and climbs or descents with restrictions. When practical, a standard instrument departure or standard arrival should be used; however, many published procedures are not suitable for testing an applicant's abilities. For example, common radar departures are essentially initial climb instructions for a radar hand-off. If a suitable published procedure is not available and circumstances permit, the inspector or examiner shall give a clearance that presents the desired tasks. Inspectors and examiners should allow applicants full use of all installed equipment. The applicant's use of navigation equipment, use of other crewmembers, and adherence to air traffic control (ATC) clearances and restrictions shall be evaluated.

B. Holding. Inspectors and examiners should give holding clearances with adequate time available for the applicant to identify the holding fix, select the appropriate speed, and plan the entry. Applicants should be allowed the use of all aids normally available in the cockpit (such as wind drift readouts). At least the initial entry and one complete turn in the holding pattern should be completed before another clearance is issued. The applicant's performance shall be evaluated on the basis of compliance with the holding procedures outlined in the operator's aircraft operating manual, compliance with instructions issued by ATC, and the published holding criteria. Holding airspeed must be as specified by the operator's aircraft operating manual.

C. Steep Turns. This event consists of a level turn in each direction with a bank of 30 degrees, continuing for at least 180 degrees, but not more than 360 degrees. Airspeed, altitude, and bank angle must be controlled within the tolerances specified in the "Airline Transport Pilot and Type Rating Practical

Test Standards” (FAA-S-8081-5), as amended. Inspectors and examiners shall direct special attention to an applicant’s smoothness, coordination, and orientation.

D. Unusual Attitude Recovery. An unusual attitude recovery shall be given at an altitude consistent with a safe recovery by the safety pilot, if the applicant is unable to make a proper recovery. The applicant must recognize the helicopter’s attitude and respond correctly. Inspectors and examiners shall observe the minimum altitudes specified for this event in the operator’s aircraft operating manual.

E. Settling with Power. The applicant must recognize and initiate immediate recovery from a critical rapid descent with power. For purposes of this maneuver, settling is reached when a perceptible buffet is felt or an indication of immediate settling is detected. If this event is prohibited in the operator’s aircraft operating manual, it shall not be conducted in flight, but shall be tested orally.

F. Specific Flight Characteristics. This event consists of recovery from flight characteristics that are specific to the helicopter type. These specific flight characteristics, when applicable, are specified in the Flight Standardization Board (FSB) report for the particular helicopter type. The inspector or examiner shall evaluate the applicant on recognition and recovery from the specific flight characteristic, when applicable. The procedures used for recovery must be those specified in the operator’s aircraft operating manual.

155. APPROACHES TO LANDINGS. The approaches described below are required on all flight tests but may be combined, when appropriate.

A. Instrument Landing System (ILS) or Microwave Landing System (MLS) Approaches. Inspectors and examiners shall require applicants to fly a minimum of one normal, all engines operative, ILS or MLS. In addition, when multiengine helicopters are used, one manually controlled ILS or MLS with an accompanying powerplant failure is also required.

(1) When the operator’s aircraft operating manual requires the use of a flight director, the flight director must be used during the manually controlled ILS or MLS approaches. If the manually controlled ILS or MLS approach is flown using a flight director, a raw data approach is not required to complete the flight test. When the flight director is used on an ILS or MLS approach, the applicant shall be required to use a decision height (DH) of 100 feet above the touchdown zone (TDZ). The DH shall be determined by the barometric altimeter. Inspectors and examiners shall ensure that the applicant is aware that this DH

is for flight test purposes only and does not correlate to any minimums used in actual operations.

(2) If the operator’s aircraft operating manual permits the conduct of raw data ILS approaches, the operator must train applicants on the use of raw data for controlling the aircraft during the approach. In this case, the flight director must be used on at least one manually controlled ILS approach. While a raw data approach is not required to complete the flight test, inspectors and examiners should occasionally require a raw data approach to determine whether the operator’s training program is adequately preparing applicants. For raw data ILS approaches, the inspector or examiner shall require the applicant to use a DH of 200 feet above the TDZ. The inspector or examiner shall ensure that the applicant is aware that this DH is for flight test purposes only and does not correlate to any minimums used in actual operations.

(3) When the operator’s helicopters are equipped with autopilot couplers, at least one coupled autopilot ILS or MLS approach shall be flown. If the autopilot has the capability and the operator is authorized by operations specifications to conduct automatic landings, the coupled approach shall terminate in either an autoland or a coupled-missed approach. When the flight test is conducted in a multiengine helicopter, the autopilot-coupled approach may be combined with the normal ILS (all engines operative) approach. This combination is permitted because the applicant’s ability to manually control an ILS approach is evaluated on the ILS with an engine out.

(4) The vision restriction device must remain in use until just before the helicopter arrives at the DH used for the flight test.

(5) Flightcrew procedures, helicopter configuration, and airspeeds must be as specified by the operator’s aircraft operating manual. During each phase of the approach, the airspeed must not deviate from the target speed by more than the tolerances specified in the Practical Test Standards (PTS). The inspector or examiner shall ensure that the applicant is aware that this DH is for flight test purposes only and does not correlate to any minimums used in actual operations. If the flight test is being conducted in actual weather conditions, the DH shall be the published DH.

B. Nonprecision Approaches. The inspector or examiner shall require the applicant to demonstrate two different types of manually controlled nonprecision instrument approaches authorized by the operator’s operations specifications.

(1) The inspector or examiner shall allow the applicant to use any aid usually available in the cock-

pit, such as flight director, drift, and ground speed read-outs. Some operators train their pilots to perform nonprecision approaches using the autopilot. While this training should be encouraged, at least one nonprecision approach must be manually flown on the flight test.

(2) The vision restriction device shall remain in place until the helicopter arrives at minimum descent altitude (MDA) and a distance from the runway approximating the required visibility for the approach.

(3) Applicants must remain within the tolerance established for terrain clearance. Also, at the visual descent point or its equivalent, the aircraft must be in a position that it can be aligned with the runway without excessive maneuvering.

C. Circling Approach Maneuver. To qualify as a circling approach for flight test purposes, the procedure to be flown must require a change in heading from the final approach course to the runway heading of at least 90 degrees. This event may be waived if local conditions, beyond the control of the applicant (traffic or available approaches), prevent it from being conducted in a realistic manner.

(1) The inspector or examiner may modify the event. For example, with the tower's approval, the visual maneuver portion of the event could be entered from a modified visual flight rules (VFR) traffic pattern at a point downwind and abeam the touchdown point.

(2) The angle of bank for a circling maneuver should not exceed 30 degrees. Altitude and airspeed must not exceed the tolerances specified in the PTS. The helicopter shall not descend below MDA until the runway environment is clearly visible to the applicant, and the helicopter is in a position for a normal descent to the touchdown point.

157. LANDING EVENTS. The following landings are required but may be combined when appropriate:

A. Normal Landing. A normal landing is defined as an approach to a stabilized hover or a touchdown, with normal power available. A normal landing can be accomplished from either a visual pattern or from a nonprecision approach.

B. Landing in Sequence from an ILS or MLS Approach. On the landing from an ILS or MLS approach, the runway environment should become visible to the applicant as close as possible to the DH being used for flight test purposes. An applicant must complete the approach to a landing or stabilized hover without excessive maneuvering and within the runway

TDZ. The approach angle must not be erratic, excessively steep, or shallow in the visual segment.

C. Crosswind Landing. Crosswind landings will normally be performed from a VFR traffic pattern, but may be combined from a nonprecision approach.

D. Maneuver and Landing with a Powerplant Inoperative—Multiengine Helicopters. Inspectors and examiners should introduce this event in a realistic manner. Consideration should be given to the helicopter weight, atmospheric conditions, and helicopter position. The helicopter position at the onset of the engine failure should allow enough room for the applicant to maneuver the helicopter and to exercise judgment.

E. Autorotation (Single-Engine Only). An autorotation is required for single-engine helicopters. Inspectors are cautioned to ensure that the landing area is appropriate for such operations. All autorotation approaches to off airport sites will be terminated in power recoveries.

159. MISSED APPROACH EVENTS. Missed approaches from two separate instrument approaches are required to complete the flight test. At least one missed approach shall be flown through the entire missed approach procedure, unless traffic or ATC restrictions prevent completing the entire procedure. One missed approach is required from an ILS or MLS. When the flight test is conducted in a multiengine helicopter, one missed approach is required with the most critical powerplant inoperative. The engine-out and ILS/MLS missed approaches may be combined; however, to complete the flight test a minimum of two missed approaches are still required.

A. Inspectors and examiners must exercise good judgment concerning the performance characteristics of the helicopter involved when performing a missed approach with the critical powerplant inoperative. When helicopter performance is critical, inspectors and examiners should use their authority to modify the event. For example, a go-around may be combined with a simulated powerplant failure at a safe altitude.

B. The applicant must promptly execute the missed approach procedure if the runway environment is not acquired at DH on an ILS or MLS approach. If the runway environment is not in sight on a nonprecision approach, or if the aircraft is not in a position to land at the missed approach point, the applicant must initiate a missed approach. If conditions on any type of approach prevent continuation of the approach, the applicant must initiate a missed approach. For example, a missed approach above DH might be required when an instrument failure flag appears. A missed approach is required if the helicopter is below

DH or MDA and cannot be properly aligned with the runway, or if the applicant loses sight of the runway environment. The applicant must adhere to the published missed approach or the instructions given by ATC and observe the procedures and limitations in the operator's aircraft operating manual. An applicant must properly use the available aids and other crewmembers when making the transition back to the instrument navigation environment.

161. NORMAL AND ABNORMAL PROCEDURE EVENTS. The inspector or examiner shall require the applicant to demonstrate the proper use of as many of the helicopter's systems and devices as necessary to determine if the applicant has a practical knowledge of the use of such systems. Evaluation of normal and abnormal procedures can usually be accomplished in conjunction with other required events and does not normally require a specific event to test the applicant's use of these systems and devices. The applicant's performance must be evaluated on the maintenance of helicopter control, the ability to recognize and analyze abnormal indications, and the ability to apply corrective procedures in a timely manner. Systems to be evaluated include, but are not limited to, the following:

- Anti-icing and deicing systems
- Autopilot and stability augmentation systems
- Navigation and airborne radar systems
- Any other available systems, devices, or aids available (such as flight management systems)

163. EMERGENCY PROCEDURE EVENTS. The applicant must be able to competently operate all installed emergency equipment and to correctly apply the procedures specified in the operator's aircraft operating manual.

A. Powerplant Failures. Inspectors and examiners may introduce malfunctions requiring an engine shutdown during the flight test. This provision is not intended as authority to require an unrealistic number of failures, but to permit such failures at times when they are most appropriate. Powerplant failures should be limited to those necessary for determining an applicant's proficiency. If a multiengine helicopter is not capable of maintaining altitude with an engine inoperative, applicants are expected to maintain the best engine-out climb speed while descending. The applicant must promptly identify the inoperative engine and initiate correct action while maneuvering the helicopter safely. Smooth application of flight controls and proper trim is required.

B. Other Emergency Procedures. Inspectors and examiners should sample as many of the following

events as necessary for determining whether an applicant is proficient in identifying and responding to emergency situations:

- Fire in flight
- Smoke control
- Hydraulic and electrical system failure or malfunctions (if safe and appropriate)
- Navigation or communications equipment failure
- Any other emergency procedures outlined in the operator's aircraft operating manual or training program

165. STANDARDS OF ACCEPTABLE PERFORMANCE. The highest grade of pilot certificate issued is the Airline Transport Pilot (ATP) Certificate. An applicant for this certificate must possess the highest degree of piloting skills and be the master of the helicopter, the crew, and the situation throughout the aircraft's operational envelope. In addition to the guidance of subparagraph 31D, the following guidance applies to the ATP certificate.

A. Manipulative Skills. The manipulative skill standards for the ATP certificate are the most rigorous of all pilot certificates issued. The skills requirement for the ATP certificate and for other certificates differs not in the tolerances allowed but in the degree of mastery required. The applicant for an ATP certificate must demonstrate the ability to operate the aircraft smoothly under a complex set of circumstances. The applicant's performance must be such that the inspector or examiner is never seriously in doubt of the successful outcome of each event of the flight test. The determination of whether an applicant's performance is acceptable or not is derived from the experience and judgment of the inspector or examiner. It is imperative that inspectors and examiners be fair and consistent when making their determinations. For example, weather, helicopter responsiveness, traffic, and other factors beyond an applicant's control may cause the applicant to deviate briefly during the accomplishment of a maneuver. In the case of turbulence, the applicant is expected to adhere to the procedures for adjusting the target speed as specified in the operator's helicopter operating manual. In such a situation, an applicant who makes a determined effort, who is generally successful in maintaining close control, and who does not deviate to the extent safety is compromised, should be considered to have met the standard.

B. Flight Management Skills. The term "pilot-in-command" (PIC) implies that the pilot is the leader of a crew and bears the final responsibility for the

safe conduct of the flight. This standard, more than any other, distinguishes the successful applicant for an ATP certificate from those holding other grades of certificates. The ATP flight test must not be limited to a simple demonstration of a series of events. An

ATP applicant must demonstrate a mastery of complex problems, good judgment, situational awareness, cockpit management, and leadership skills.

166.-170. RESERVED.

**FIGURE 5.2.5.1.
ATP/TYPE RATING ORAL TEST JOB AID—HELICOPTER**

I. APPLICATION PHASE. The applicant must present:

- ☐ FAA Form 8410-2 (application) completed and signed
- ☐ Current medical certificate:
 - 1. For original ATP: First class
 - 2. For additional class or type rating: Third class
- ☐ Pilot Certificate:
 - 1. For original ATP: Commercial or equivalent
 - 2. For additional class or type rating: ATP
- ☐ Current or validated AC Form 8080-2, "Airman Written Test Report," for ATP or additional class rating. If validity date of oral extended, add the following comment to AC Form 8080-2: "The period of validity of this form has been extended in accordance with the applicable provisions of FAR § 61.39(b)," and date, and sign.
- ☐ FAA Form 8060-5, "Notice of Disapproval of Application" (if applicable)
- ☐ Training records showing applicant has successfully completed all ground training events including integration training

II. THE ORAL TEST

☐ A. Knowledge of Aircraft Systems

- | | |
|--|---|
| <input type="checkbox"/> Hydraulic | <input type="checkbox"/> Electrical |
| <input type="checkbox"/> Pneumatic | <input type="checkbox"/> Powerplants |
| <input type="checkbox"/> Flight instruments | <input type="checkbox"/> Flight controls |
| <input type="checkbox"/> Landing gear, wheel | <input type="checkbox"/> Autopilot, F/D |
| <input type="checkbox"/> FMS, EFIS | <input type="checkbox"/> Navigation systems |
| <input type="checkbox"/> Fuel | <input type="checkbox"/> Rotor system |

- ☐ B. Knowledge of and ability to compute performance data, takeoff, landing, and cruise performance
- ☐ C. Weight and balance
- ☐ D. Ability to perform or state "Immediate Action" items
- ☐ E. Knowledge of and ability to state operating limitations
- ☐ F. Knowledge of related items (such as MEL)

**FIGURE 5.2.5.2.
ATP/TYPE RATING TYPE RATING JOB AID—HELICOPTER**

GROUND OPERATIONS

Preflight Inspection	[]
Taxiing and Ground Hover	[]
Powerplant Checks, Rotor Engagement	[]

TAKEOFFS

Normal	[]
Instrument	[]
Crosswind	[]
With Powerplant Failure	[]
Rejected Takeoff	[]

INSTRUMENT PROCEDURES

Area Departure	[]	
Area Arrival	[]	
Holding	[]	
Normal ILS Approach	[]	With F/D
Autopilot-Coupled ILS	[]	If equipped
Engine-Out ILS	[]	
Nonprecision Approach	[]	
Second Nonprecision Approach	[]	
Circling Approach	[]	
Missed Approach from an ILS	[]	
Engine-Out Missed Approach	[]	

IN-FLIGHT MANEUVERS

Steep Turns	[]
Settling with Power	[]
Specific Flight Characteristics	[]
Powerplant Failure	[]

LANDINGS

Normal Landing	[]
Landing from an ILS	[]
Crosswind Landing	[]
Aut rotation (Single-Engine)	[]
From Circling Approach	[]

NORMAL, ABNORMAL, AND EMERGENCY PROCEDURES—SAMPLE

[] Anti-Icing and Deicing; Hydraulic, Electrical, Pneumatic, and Other System Failures; Gear, Flaps, Control Systems; Navigation and Communications Equipment; Fire in Flight, Smoke Control; Decompression, Emergency Descent, Emergency Landing, and Evacuation

NOTE: Inspectors should refer to the appropriate section of “Airline Transport Pilot and Type Rating Practical Test Standards” (FAA-S-8081-5), as amended, for maneuver tolerances.

FIGURE 5.2.5.2.—Continued
ATP/TYPE RATING TYPE RATING JOB AID—HELICOPTER

BRIEFINGS

- [] A. Brief Applicant:
 - 1. Departure point, destination, route, weather
 - 2. Aircraft weight and fuel load
 - 3. Role of inspector
 - 4. Use of crewmembers and autopilot (Applicant is in command and must perform command duties successfully.)
 - 5. Review minimums to be used on test

 - [] B. Brief Supporting Crewmembers:
 - 1. Crew will perform normal duties of their positions
 - 2. Will act in support role and not initiate. May be asked to delete calls, altitude alerts, etc.
 - 3. Duties of safety pilot

 - [] C. Safety Pilot Briefing:
 - 1. Use of hood
 - 2. Transfer of controls
 - 3. Simulated emergencies
 - 4. Response to an actual emergency
 - 5. Autorotations
 - 6. Other specific events
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[PAGES 5-106 THROUGH 5-112 RESERVED]